# APC BC300 Series 15kW 208/450/480V Installation Guide

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**Thank You**

Thank you for choosing the APC BC300 Series. Read this Installation Guide before you install and use the system as it provides important information on safe and efficient installation and use.

The installation and use of this product must comply with national, federal, state, municipal and local codes.

**IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS**

**Safety Symbols used in this manual**

**WARNING!** Indicates a hazard which, if not avoided, could result in injury or death.

**CAUTION!** Indicates a hazard which, if not avoided, could result in damage to the product or other property.

**NOTICE!** Read and pay attention to this important information.

**WARNING**

This UPS unit contains hazardous AC and DC voltages. Only qualified electricians should connect the UPS, AC line and external batteries, and must be familiar with batteries and battery installation.

Before installing, maintaining or servicing the UPS, shut off the UPS and disconnect all sources of AC and DC power.

As the UPS has no built-in disconnection devices to switch off external AC and DC input power, ensure that disconnection devices are available as separate parts in connection with the installation.

The installer must provide each external disconnecting device for this UPS system with labels with the following text:

“Isolate the Uninterruptible Power Supply (UPS) as instructed in this guide before working on circuit”.

AC and/or DC voltage will always involve a potential risk of AC voltage at UPS output generated from either batteries or utility. To avoid equipment damage or personal injury, always assume that there may be voltage at UPS output.

This system is equipped with an auto-start function. If activated, the system may start without warning. Refer to the “Programming” section for information on de-activation.

**TEST BEFORE YOU TOUCH!**

To reduce the risk of fire or electric shocks, install the UPS and external batteries in a temperature and humidity controlled indoor area, free of conductive contaminants.

UPS batteries are high-current sources. Shorting battery terminals, DC terminals or DC busbars can cause severe arcing, equipment damage and injury. A short circuit can cause a battery to explode. Always wear protective clothing and eye protection and use insulated tools when working on batteries.

**CAUTION!**

This unit contains components sensitive to electrostatic discharge (ESD). If you do not follow the ESD procedures, you may cause severe damage to electronic components.

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# 1.0 Introduction

This Installation Guide provides the electrician with information on UPS installation, wiring, start-up and shut-down procedures along with Maintenance Bypass Panel phase check and external battery installation.
Electricians should always refer to national and local electrical codes prior to installing the UPS system.

## 1.1 Tools and Equipment Needed

This section lists all tools and equipment required to connect the UPS to the Maintenance Bypass Panel.

**Insulated Tools and Other Equipment Needed:**

- Torque wrench in inch-pounds or newton-meters
- Standard U.S. and metric wrenches
- Petroleum jelly or conductive grease
- Brush (for applying petroleum jelly or conductive grease to battery terminals)
- Mallet
- Volt-Ohm meter (True RMS - Digital)
- Pliers
- Ratchet and sockets
- Electrical tape
- Standard and Phillips screwdrivers
- Torx head screwdriver set
- APC BC300 User Guide
- Phase rotation meter

Cables and interconnection hardware not provided by APC.

# 2.0 Receiving, Unpacking, Moving and Storing the UPS and Batteries

## 2.1 Receiving, Unpacking and Moving to Site

**CAUTION!**
Heavy equipment. To prevent personal injury or equipment damage, use caution when handling and transporting UPS cabinet and equipment.

1. While the UPS system is still on the truck, inspect the equipment and shipping container(s) for any signs of damage. Do not install the system if damage is apparent. If damage has occurred, notify APC as soon as possible.
2. Compare the shipment with the bill of lading. Report any missing items to the carrier and to APC immediately.
3. Remove the screws on the bottom part of the packaging side plates.
4. Remove the packing materials from the unit.
5. Verify compliance between type label on reverse side of UPS front door and system ordered. Check input and output voltage.
6. Unbolt the unit from the pallet.
7. Remove the unit from the pallet with a fork lift.
8. Use a fork lift or hand truck to transport the unit to the installation or storage site. Study the footprint to decide how to move the UPS through doorways and into position.

**PLEASE RECYCLE**
The shipping materials are recyclable. Please save for later use or dispose of them appropriately.

## 2.2 Storing the UPS and Batteries

Store the APC BC300 Series UPS between -4 and 104° F (-20 and 40° C). However, APC recommends that the unit and batteries be stored between 59 and 77° F (15 and 25° C). This temperature range, or cooler, allows batteries a longer shelf life. Recharge stored batteries every 90 to 120 days.
See the section “Requirements on Site” in this Installation Guide for further details.

# 3.0 Installation

## 3.1 Requirements on Site

A 3-foot free space on all sides should be allowed during installation. Place the UPS in a clean, dust-free environment, free of contaminants. Allow air circulation around the UPS cabinet and any battery cabinets or racks.

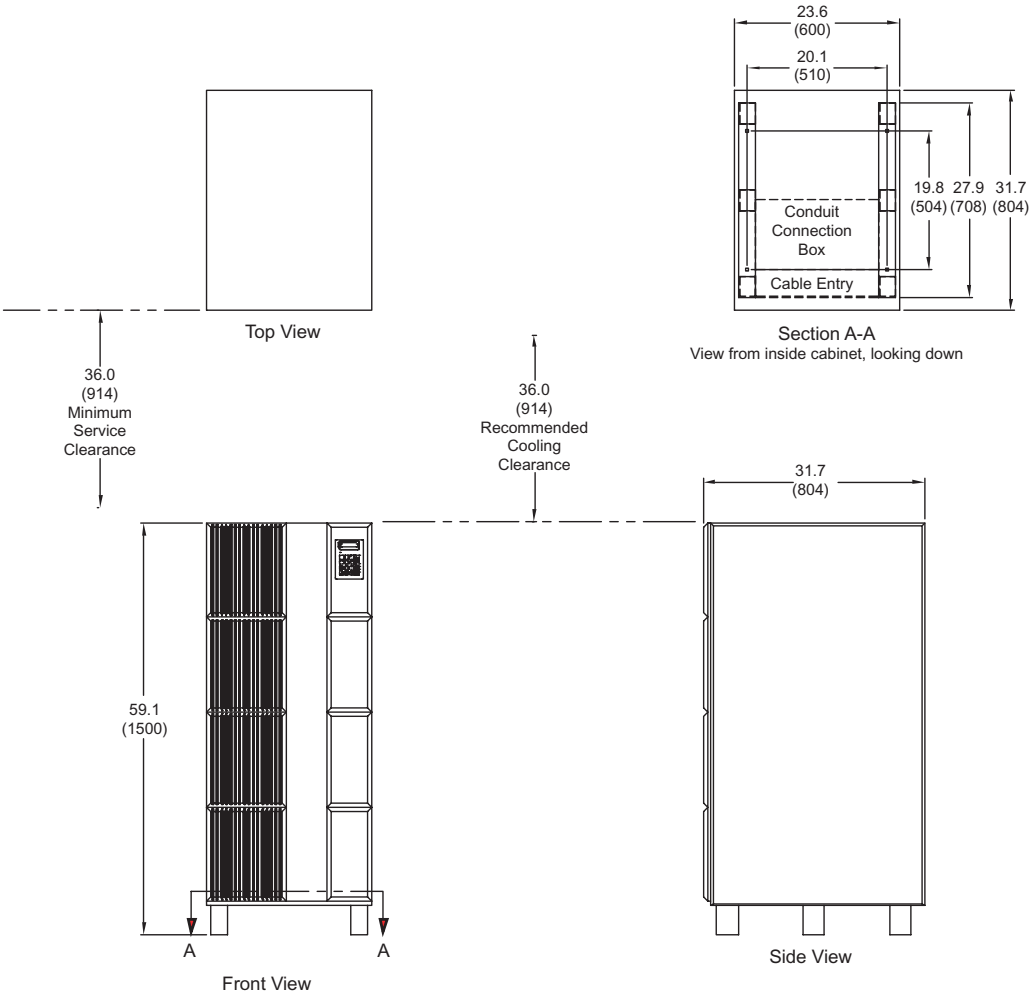
- Ambient temperature range: 32 to 104° F (0 to 40° C).
  Ideal temperature: 77° F (25° C)

  **NOTE:** At 92° F (33° C), battery life would be approx. 50% compared to storage at a normal temperature of 77° F (25° C). At 113° F (45° C). Battery life will be reduced to some 25%. Make sure that the floor can support the weight of the UPS, external batteries, and any other necessary equipment.
- Never install systems in direct sunlight or near heat sources.
- Service access from front and top of unit. Cable entry from bottom of unit.
- Do not operate the UPS or batteries in a sealed room or container.

**NOTICE!**
Allow a minimum clearance of 3 foot (914mm) for service in front of and above the UPS and 6 inches (152mm) at the back.

**NOTICE!**
Do not stand on the UPS. Keep the UPS cabinet surface free of objects.

### 3.1.1 UPS Footprint (measurements in inches & mm)




Notes:
1. All dimensions are in inches (millimeters).
2. Minimum cooling and service clearance 36.00 (914).
3. Conduit entry is bottom of unit.
4. Unit weight = 1BPI 1237lbs (561kg) 2BPI 1464lbs (665kg).
5. Installation must comply with all applicable national and local codes.

*Figure 1*

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## 3.2 Installing the Conduit Connection Kit

**Insulated and other tools required**

- 13 mm ratchet or wrench
- T20 torx screwdriver
- Greenly punch
- Equipment suitable for lifting heavy UPS off the ground

### 3.2.1 Conduit Connection Kit Contents

For Pedestals:

- 23 pedestals
- 4 M8 x 100 mm bolts
- 4 M8 lock washers
- 4 M8 flat washers
- 4 M8 nuts

For Conduit Box:

- 1 Conduit Box
- 1 Conduit Box Cover
- 11 M5 x 12 mm T20 Torx screws
- 11 M5 lock washers
- 11 M5 flat washers

For Base Covers:

- 2 Side Base Covers
- 2 Front/Rear Base Covers
- Hook and loop fasteners

### 3.2.2 Installing Pedestals

**CAUTION!**
Heavy Equipment. Use caution and appropriate equipment to safely lift the UPS several inches above the floor when installing pedestals.

1) Remove brackets mounted to the UPS feet during shipping
2) Lift the UPS off the floor and place the pedestals under UPS feet where the all holes of pedestals and holes in UPS feet are aligned
3) With caution lower the UPS feet into pedestal
4) Fasten but DO NOT TIGHTEN botls, washers and nuts on the four corner feet of UPS

**NOTICE!**
Place flat washer under the bolt head and the lock washer under the nut.

5) Move the UPS to the installation site
6) Tighten the bolts

### 3.2.3 Installing Conduit Box and Base Covers

1) Punch conduit holes in the back of the conduit box
2) Place the conduit box between the center leg and right leg of the unit, whith the open side facing the front of the unit
3) Use four T20 torx screws and washers to fasten the conduit box to the front legs of the UPS

**NOTICE!**
Place flat washer, lock washer and screw in this particular order.

4) After all UPS wiring has been completed, attach conduit box cover to the front of the conduit box
5) Use hook and loop fasteners to attach the base covers to the UPS

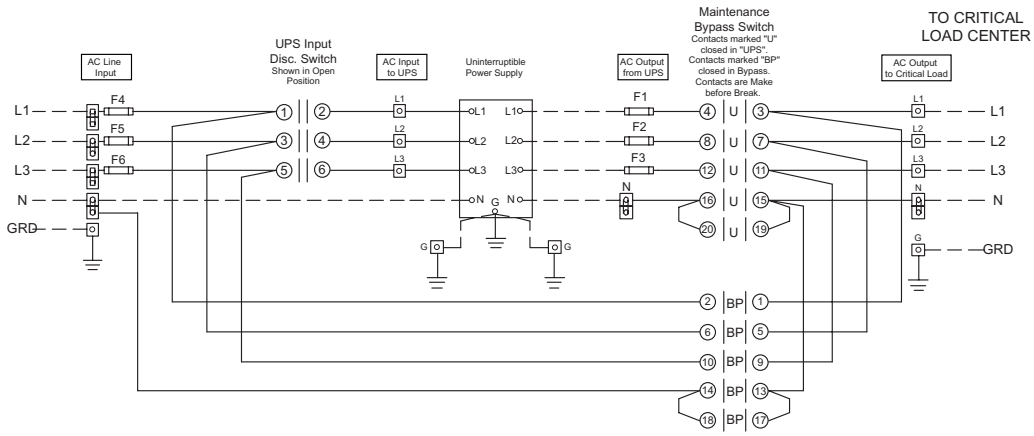
## 3.3 Installing the Maintenance Bypass Panel and UPS

**IMPORTANT!**
If you do not have an APC Maintenance Bypass Panel, you must provide overcurrent protection and a UPS input AC disconnect means.
APC **strongly recommends** that a means of bypassing the UPS from the critical load be provided for maintenance.

Follow these guidelines when installing the Maintenance Bypass Panel and UPS:

- Install the Maintenance Bypass Panel within sight of the UPS. When installing the Maintenance Bypass Panel, see illustrations under *Wiring Diagram for BC300* and any instructions provided with the Maintenance Bypass Panel.
- Install all wiring in accordance with applicable electrical codes. Use 75° C copper conductors.

- Install the AC input and UPS output in separate conduits. **UPS output circuits must be installed in dedicated conduit systems** and separate from other electrical circuits.
- Control wiring must be installed in a separate conduit.
- Good ground connections are necessary to reduce electrical noise and make the operation of the UPS and the loads safe. Follow the grounding guidelines in the installation wiring diagram. Refer to the National Electrical Code (NEC), appropriate IEEE documents, and all applicable codes.
- For systems with non-linear, neutral-connected loads, standard practice is to size the neutral conductor for 1.732 times the phase current.
- When installing the AC wiring, refer to the illustration *Single Line Diagram for BC300* and to any additional diagrams provided with the UPS. The illustration shows **typical installations**. Your installation may be different.
- See *Component Overview* illustration for a view of the UPS with covers removed. See *Wiring Termination* or *Component Overview* illustrations for UPS wiring terminations. Refer to illustration *External Connection Board* for information on the external connection board. See illustration *Communication Interface Board (Option)* for information on the optional communication interface board.
  If you have any questions, contact APC Technical Support for assistance.




Notes:
1. 208V F1, F2, F3 = 45A
2. 480V F1, F2, F3 = 25A
3. 208V F4, F5, F6 = 65A
4. 480V F4, F5, F6 = 30A
5. All AC power cabling is 3 or 4 wire + Ground at 208VAC / 480VAC 3-phase.
6. Installation must comply with all applicable national and local codes.

*Figure 2 - SBP Electrical Schematic 208V & 480V*

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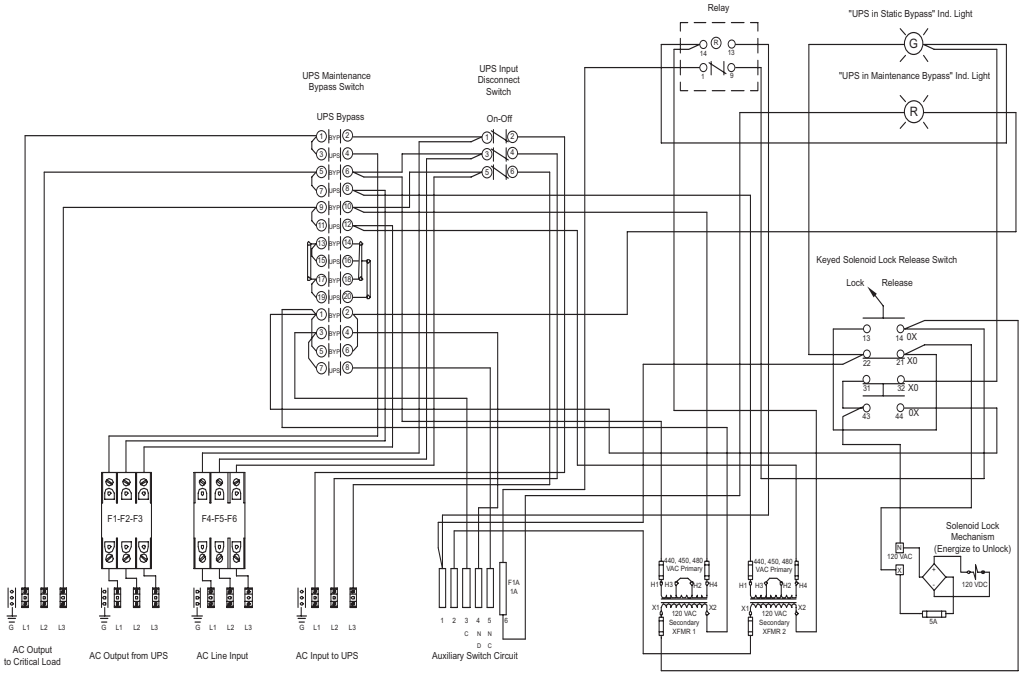


Notes:
1. F1, F2, F3 = 25A
2. F4, F5, F6 = 30A
3. All AC power cabling is 3 wire + Ground at 450VAC 3-phase.
4. Installation must comply with all applicable national and local codes.

*Figure 3 - SBP Electrical Schematic 450V*

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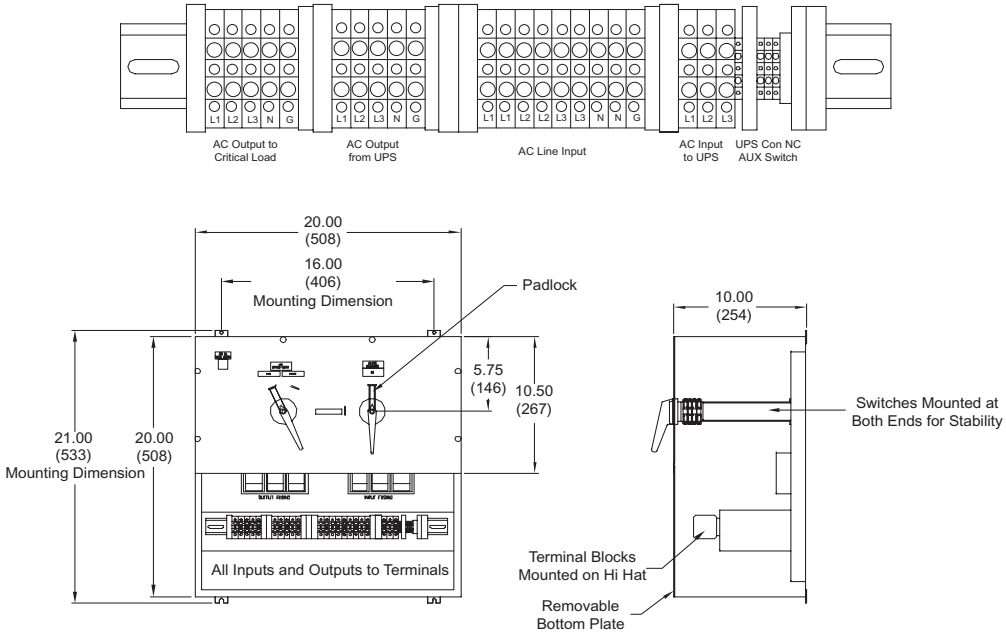


Notes:
1. All dimensions are in inches (millimeters)
2. Minimum cooling and service clearance 36.00 (914) from fromt of unit.
3. Installation must comply with all applicable national and local codes.

*Figure 4 - SBP Electromechanical 15kW 480V*

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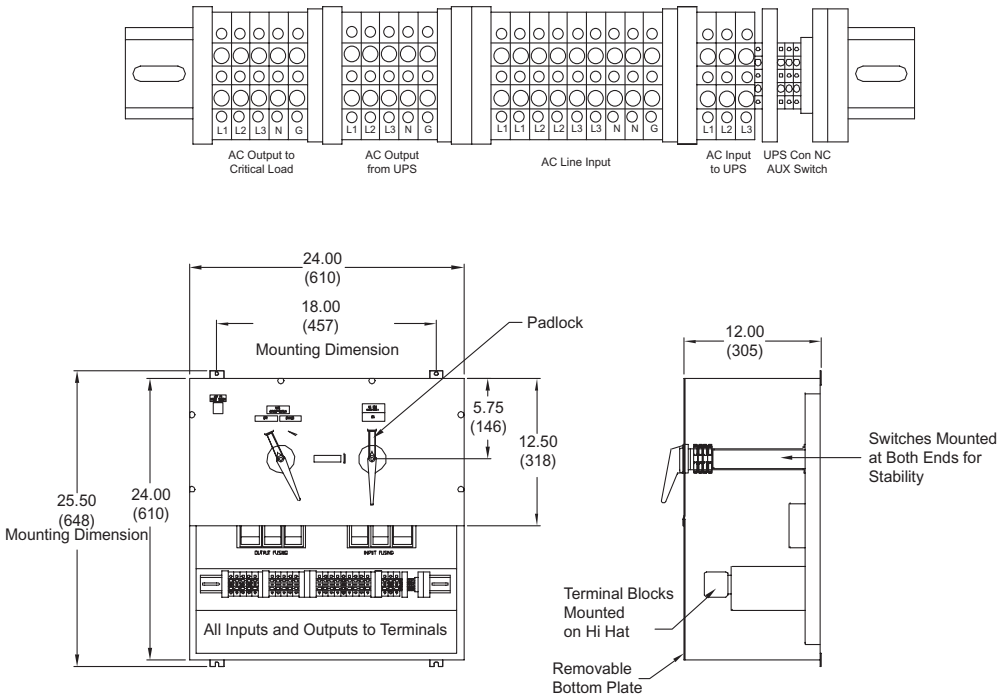


Notes:
1. All dimensions are in inches (millimeters)
2. Minimum cooling and service clearance 36.00 (914) from fromt of unit.
3. Installation must comply with all applicable national and local codes.

*Figure 5 - SBP Electromechanical 15kW 208V*

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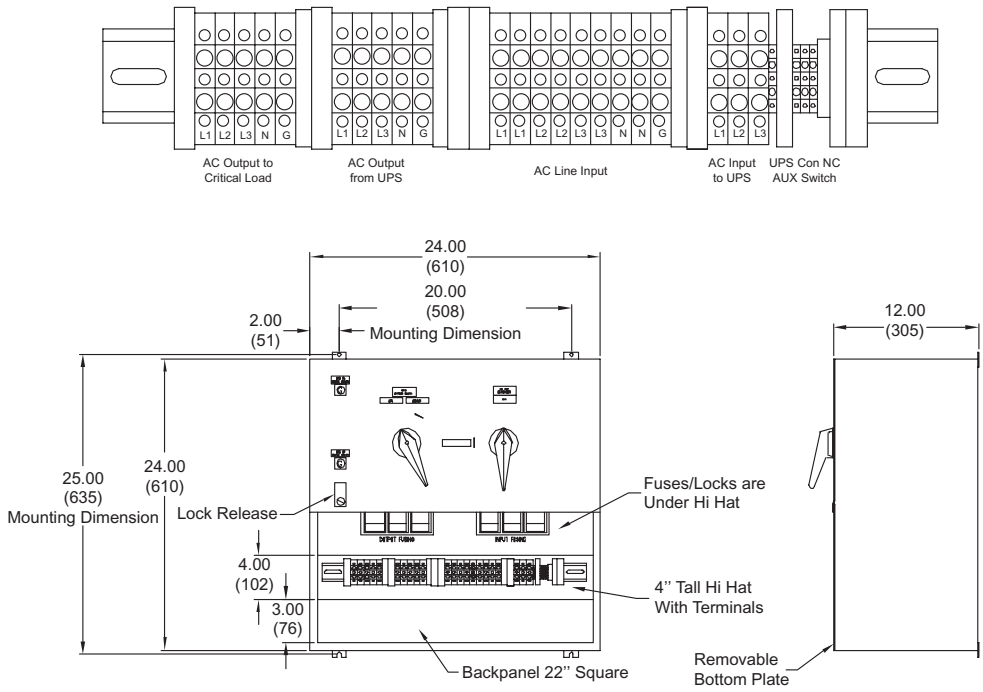


Notes:
1. All dimensions are in inches (millimeters)
2. Minimum cooling and service clearance 36.00 (914) from fromt of unit.
3. Installation must comply with all applicable national and local codes.

*Figure 6 - SBP Electromechanical 15kW 450V*

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### 3.3.1 Component Overview (door open)

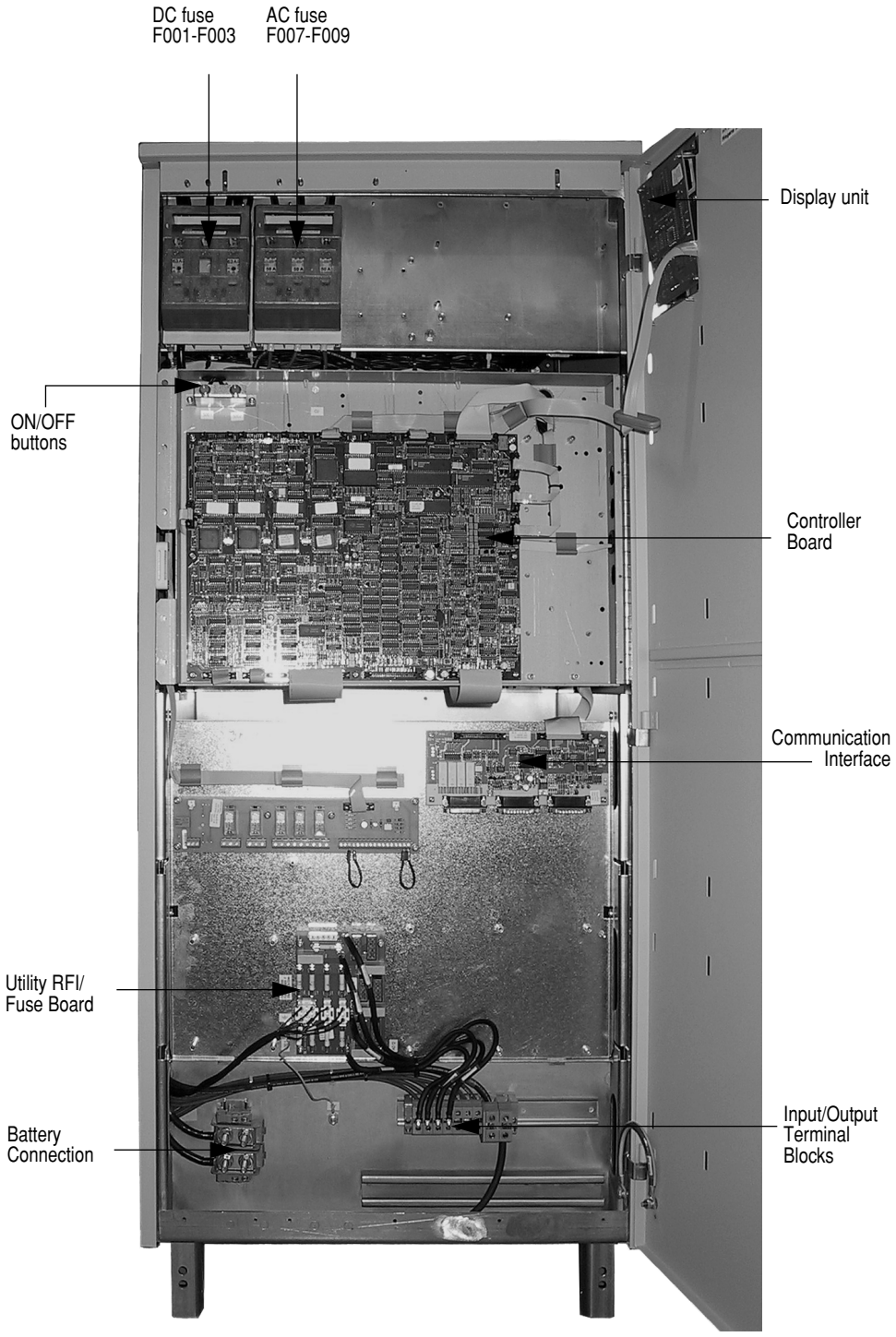


*Figure 7*

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### 3.3.2 Wiring Terminations

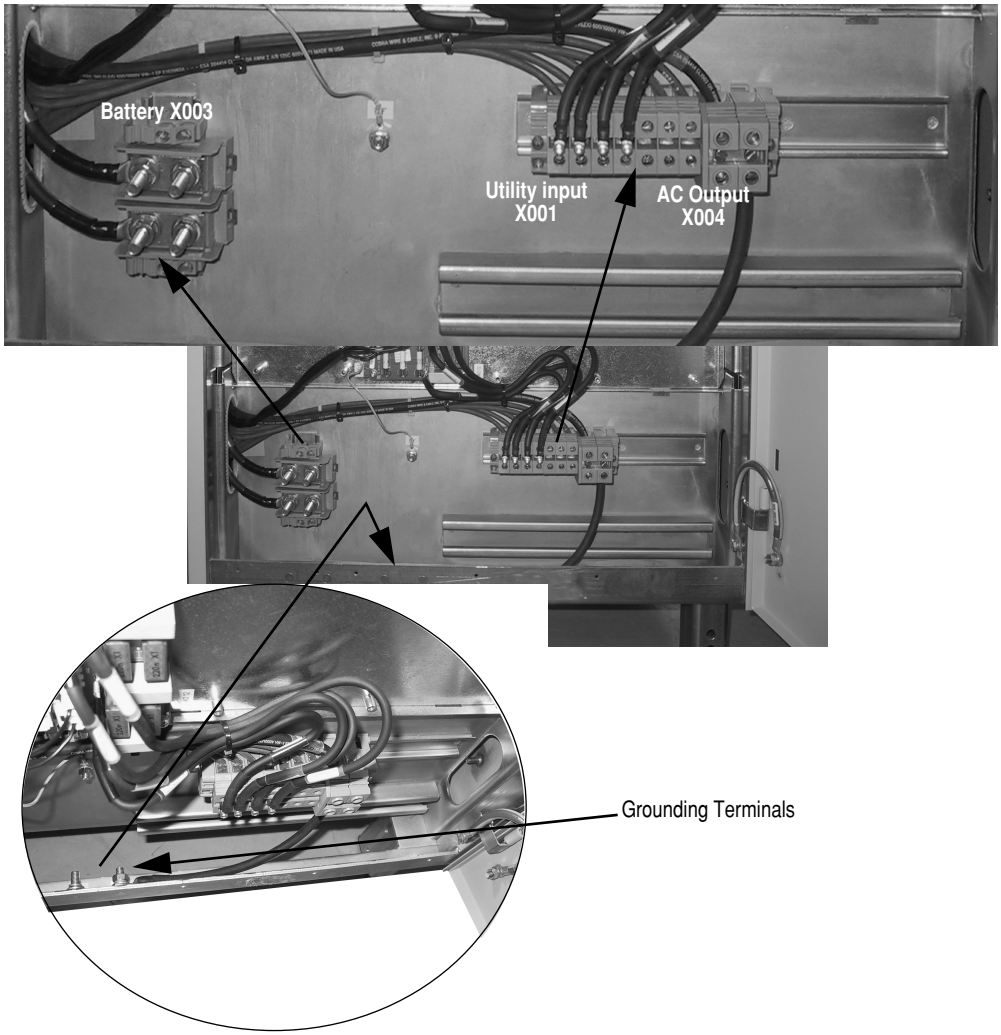


*Figure 8*

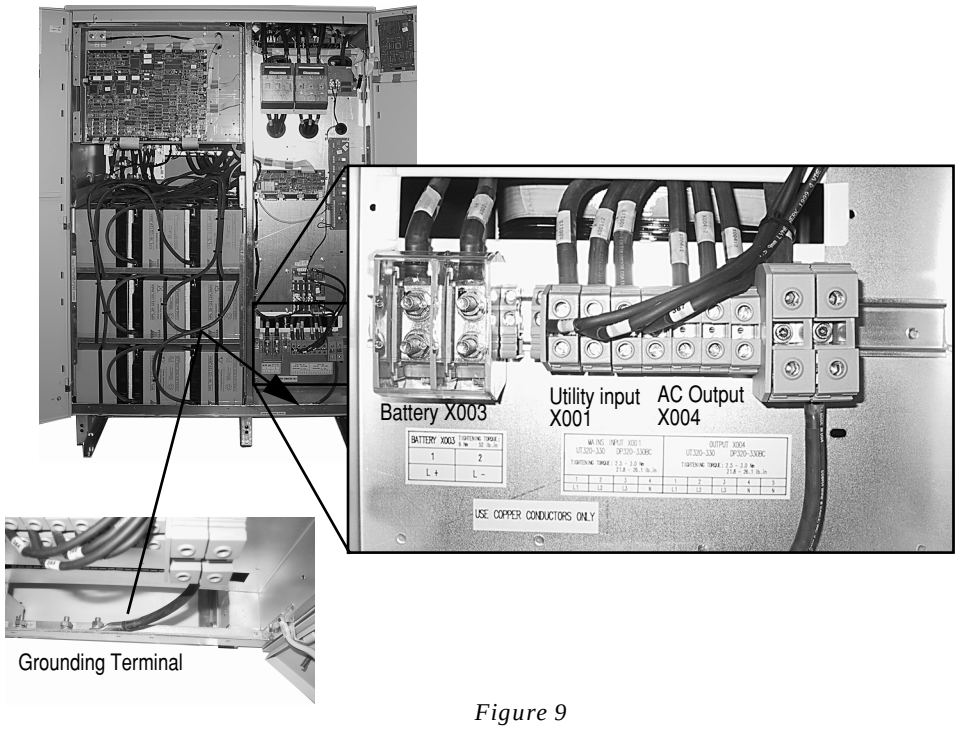
Battery X003
Utility input
X001
AC Output
X004
USE COPPER CONDUCTORS ONLY
Grounding Terminal

*Figure 9*

### 3.3.3 Wiring Diagram for BC300

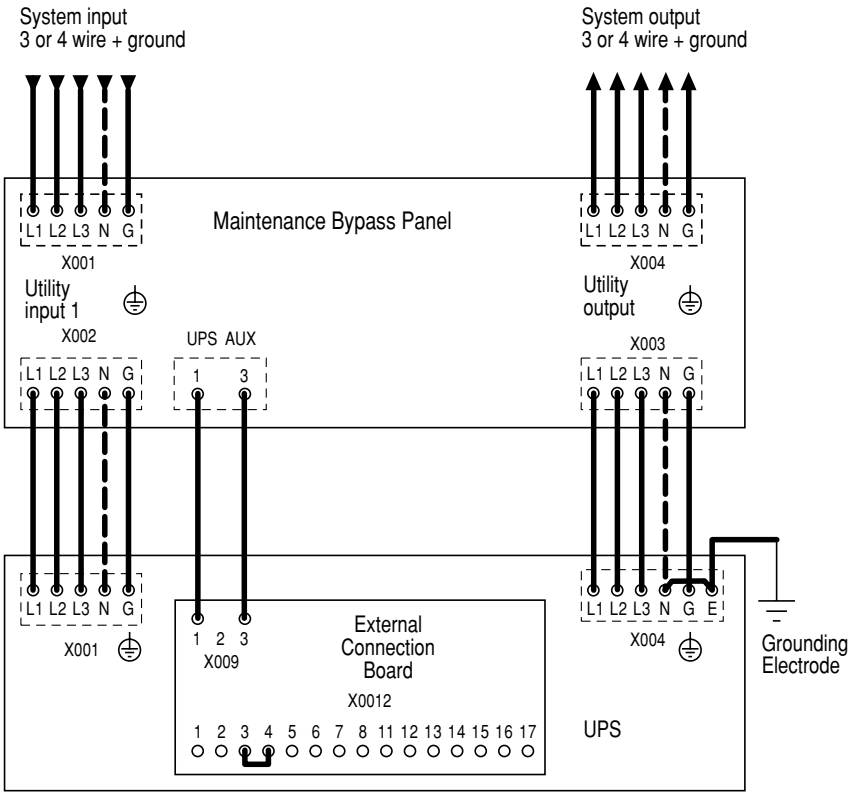


*Figure 10*

Notes:

1. Must be 3 or 4 wire + ground provided source
2. Cables not provided by APC.
3. All AC power cables must be 3 or 4 wire plus ground 3-phase
4. Power and data cabling must be run in separate conduits.
5. Installation must comply with national and local codes.

**NOTICE!**
You must provide overcurrent protection and UPS input AC disconnect means.
Refer to “Technical Specifications” section in this Installation Guide for recommended UPS input and output overcurrent protection.

**CAUTION!**
UPS systems can be connected as 3-phase, 3-wire plus ground, if no loads are using the neutral conductor.

**CAUTION!**
Read warnings on page 2 of this Installation Guide before continuing.

**NOTICE!**
Only authorized electricians may install the UPS and all applicable codes must be observed.

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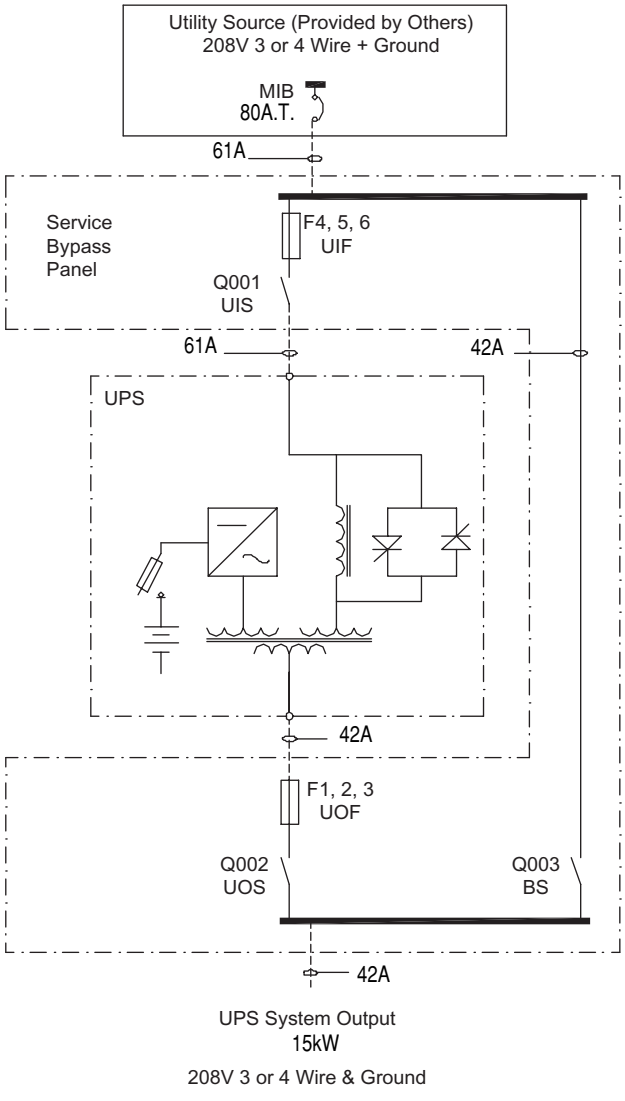
**NOTICE!**
Always keep AC, DC and communication cables separated.

**NOTICE!**
The grounding electrode conductor (Protective Earth - PE) must be the same size (ampacity) as the UPS input circuit conductors. Conduit is not an acceptable grounding electrode conductor - see National Electrical Code Section 250-91(a).

**NOTICE!**
The unit is wired from the factory as a separately derived system. Output neutral is bonded to equipment ground through main bonding jumper inside the UPS. See National Electrical Code Article 250-5(d) and 250-26 for correct installation grounding.

### 3.3.4 Single Line Diagram for BC300




Notes:
1. Must be 3 or 4 wire + Ground provided WYE-source.
2. Must be 3 or 4 cabling provided by others.
3. Input overcurrent protection is based on 80% rating - any deviation, please contact APC.
4. F1, F2, F3 = 45A
5. F4, F5, F6 = 65A
6. All AC power cabling is 3 or 4 wire + Ground at 208VAC 3-phase.
7. UPS output cables and input cables must be in separate conduits.
8. Power wiring and control wiring must be in separate conduits.
9. See installation manual for battery information.
10. Installation must comply with all applicable national and local codes.

*Figure 11*

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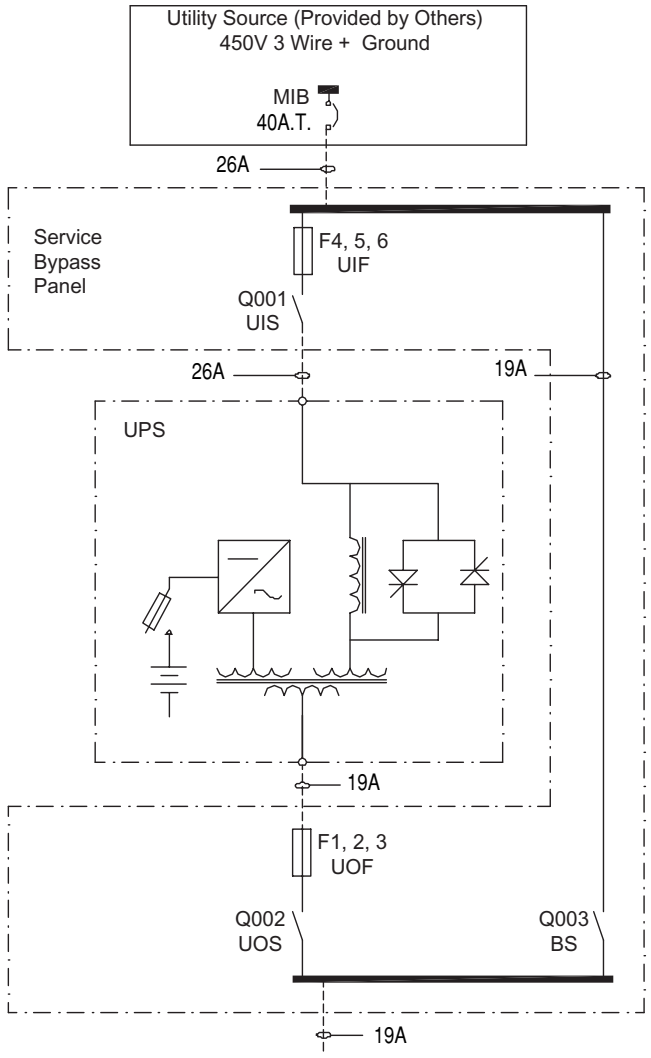


Notes:
1. Must be 3 wire + Ground
2. Must be 3 wire + Ground cabling provided by others.
3. Input overcurrent protection is based on 80% rating - any deviation, please contact APC.
4. F1, F2, F3 = 25A
5. F4, F5, F6 = 30A
6. All AC power cabling is 3 wire + Ground at 208VAC 3-phase.
7. UPS output cables and input cables must be in separate conduits.
8. Power wiring and control wiring must be in separate conduits.
9. See installation manual for battery information.
10. Installation must comply with all applicable national and local codes.

*Figure 12*

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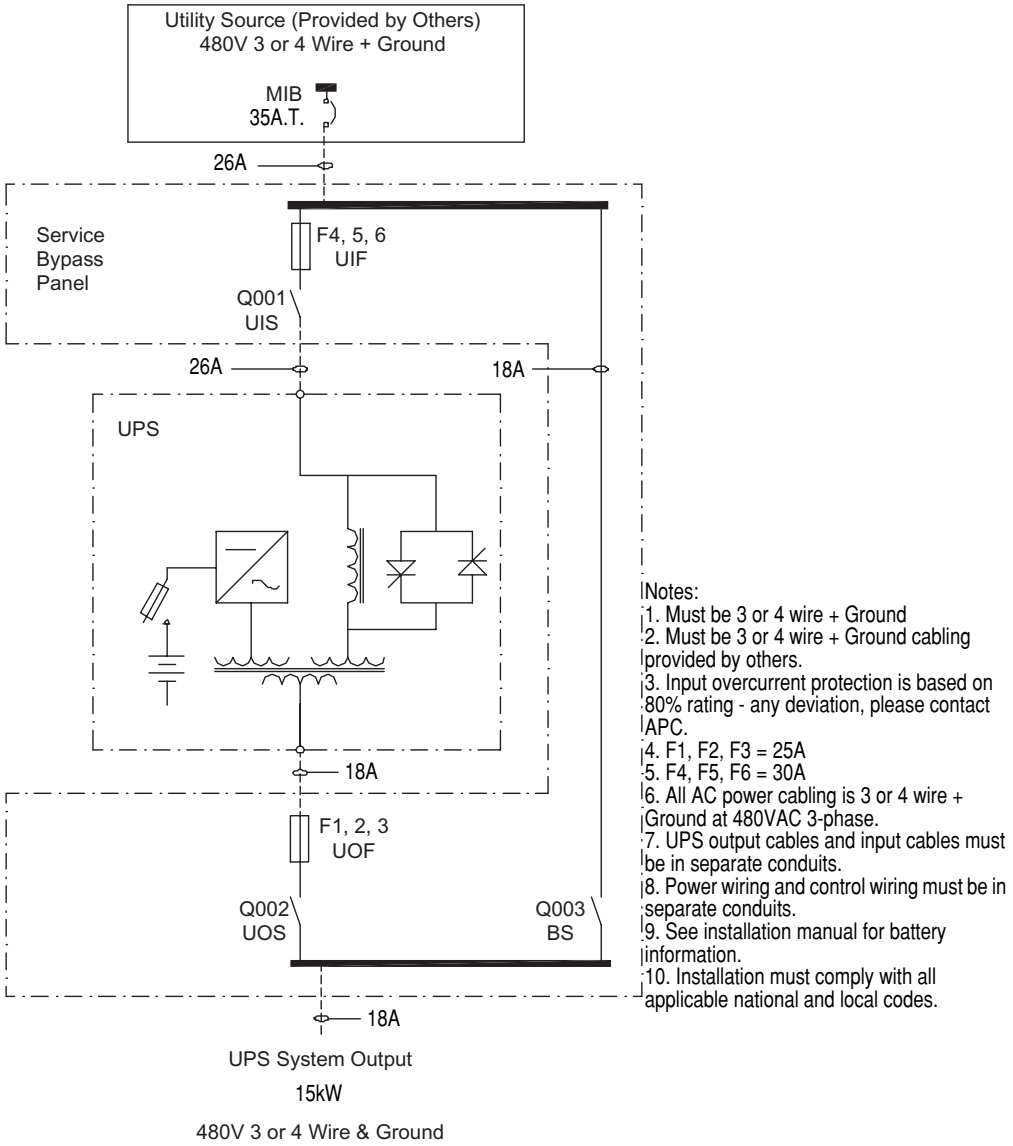


*Figure 13*

**NOTICE!**
Size utility input overcurrent protection device as per applicable codes. See below table for utility input voltage and current ratings.

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| UPS Model | Input Current | Output Current | Recom-mended MIB | DC Voltage | DC Current |
|---|---|---|---|---|---|
| 15kW 208V | 61A | 42A | 80AT | 216V | 75A |
| 15kW 450V | 26A | 19A | 40AT | 216V | 75A |
| 15kW 480V | 26A | 18A | 35AT | 216V | 75A |

Notes:

1. 3 or 4 wire provided source.
2. Cables not provided by APC.
3. Recommended input over current protection (MIB) based on an 80% rated device.
4. All AC cables must be AC 3 or 4 wire 3-phase.
5. Keep UPS input, output and control cables in separate conduits.
6. Installation must comply with all applicable national and local codes.

**NOTICE!**
You must provide overcurrent protection and UPS input AC disconnect means.
See the “Technical Specifications” section in this Installation Guide for recommended UPS input and output overcurrent protection.

**CAUTION!**
UPS systems can be connected as 3-phase, a 3-wire plus ground, provided that the load is not connected to the neutral conductor.

**NOTICE!**
Only authorized electricians may install the UPS and all applicable codes must be observed.

**NOTICE!**
Always keep AC, DC and communication cables separated.

**NOTICE!**
The grounding electrode conductor (Protective Earth - PE) must be the same size (ampacity) as the UPS input circuit conductors. Conduit is not an acceptable grounding electrode conductor - see National Electrical Code Section 250-91(a).

**NOTICE!**
The unit is wired from the factory as a separately derived system. Output neutral is bonded to equipment ground through main bonding jumper inside the UPS. See National Electrical Code Article 250-5(d) and 250-26 for correct installation grounding.

**NOTICE!**
The maintenance bypass switch must be a 4-pole device switching all three phases and neutral. If you are using a 3-pole device, contact APC Technical Support for instructions on how to convert the unit to a not-separately derived system.

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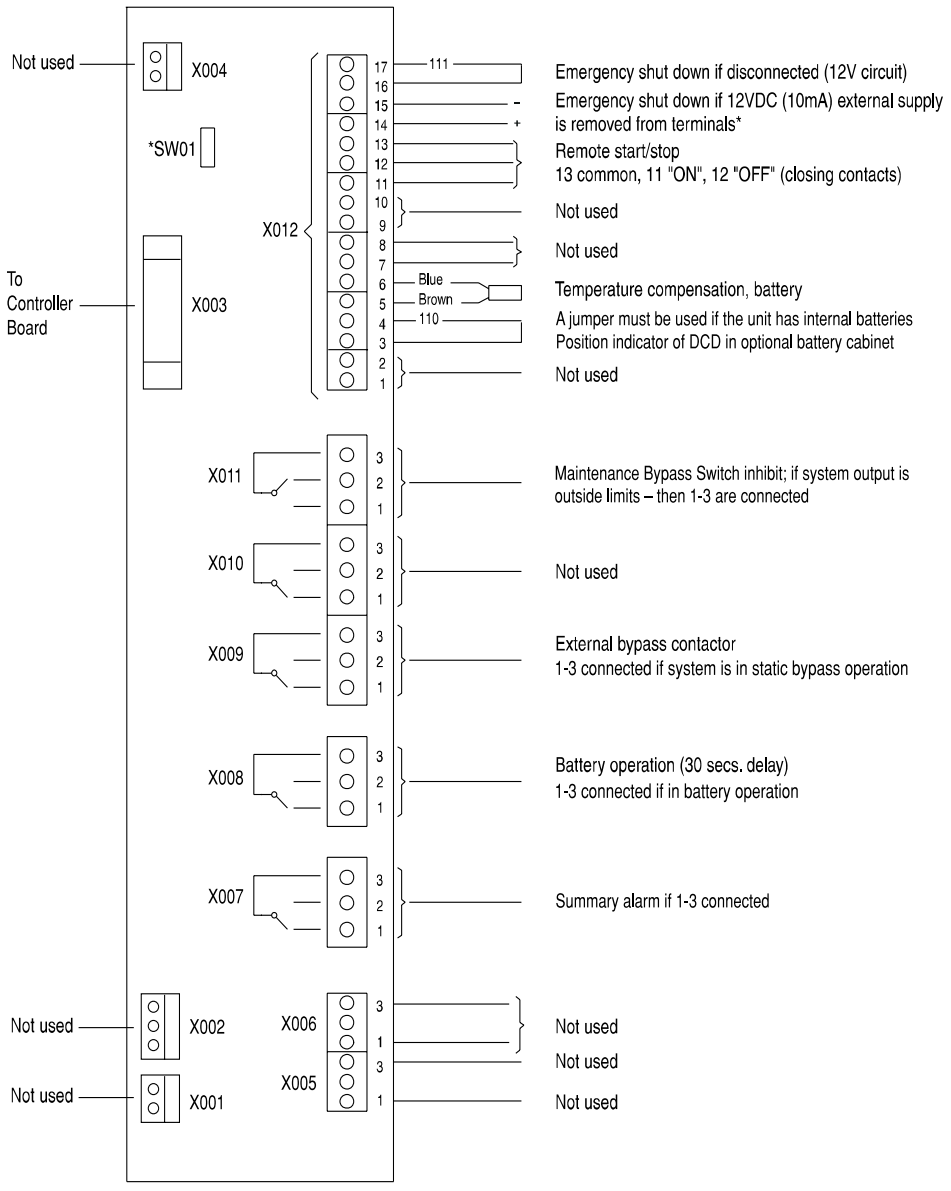
### 3.3.5 External Connection Board

Use Class 1 wiring methods.




X007-X011 are change over relay contacts (not to exceed NEC ART. 725 C Class 2 limits: 250 VAC @ 8 A; 60 VDC @ 0.5 A)

*Remove jumper SW01 to use this function

*Figure 14*

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### 3.3.6 Communication Interface Board (Option)

Use Class 1 wiring methods.

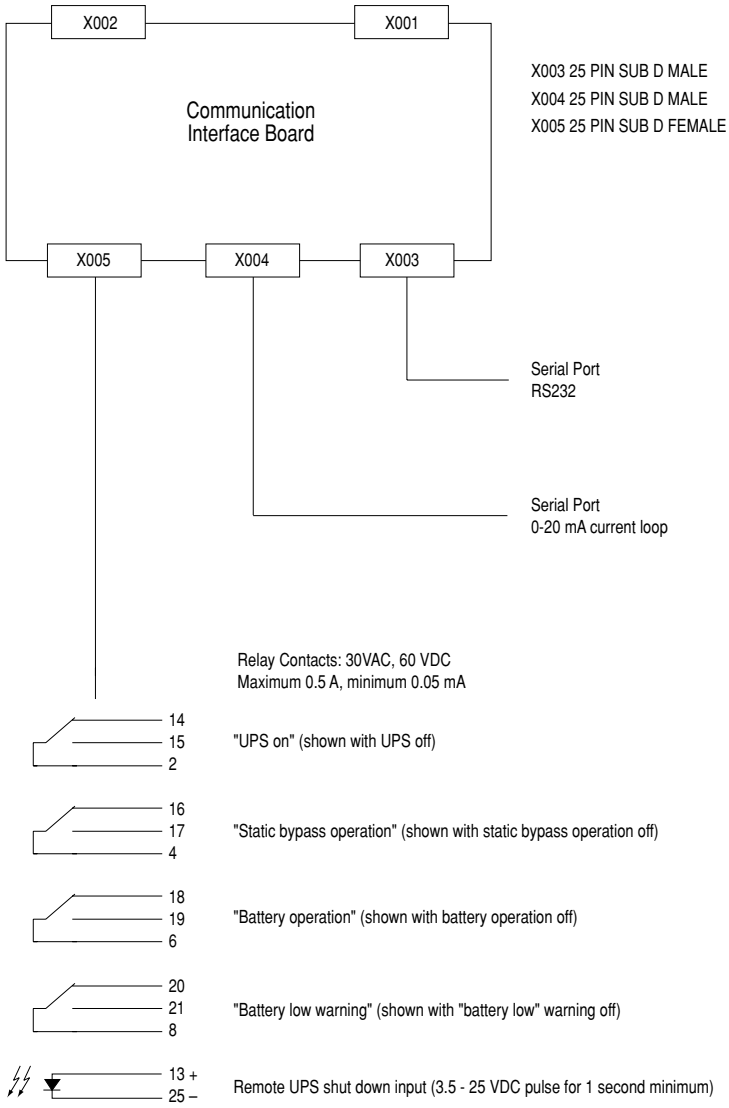


*Figure 15*

## 3.4 Installation of External Batteries and Battery Breaker

Some units are connected to optional external batteries in a separate cabinet or rack. External batteries must be installed and connected to the UPS by an authorized service person familiar with UPS battery installations and applicable building and electrical codes.

### 3.4.1 Battery Installation

**WARNING**
Full voltage and current are always present at the battery terminals. The batteries used in this system can produce dangerous voltages, extremely high currents, and may cause a risk of electric shock. They may cause severe injury if the terminals are shorted together or to ground (earth). You must be extremely careful to avoid electric shock and burns caused by contacting battery terminals or shorting terminals during battery installation. Do not touch uninsulated battery terminals.
Only authorized service personnel familiar with battery systems and required precautions may install and service the batteries. The installation must conform to national and local codes. Keep unauthorized personnel away from batteries.

**CAUTION!**
The qualified service person must take these precautions:

1. Wear protective clothing, such as rubber gloves and boots and protective eye wear. Batteries contain caustic acids and toxic materials and can rupture or leak if mistreated. Remove rings, metal wristwatches, other metal objects and jewellery. Do not carry metal objects in your pockets where the objects can fall into the battery cabinet.
2. Tools must have insulated handles and must be insulated so that they will not short battery terminals. Do not allow a tool to short between individual or separate battery terminals or to the cabinet or rack. Do not lay tools or metal parts on top of the batteries, and do not lay them where they could fall onto the batteries or into the cabinet.
3. Install the batteries as shown on the drawing provided with the batteries. When connecting cables, never allow a cable to short across a battery's terminals, the string of batteries, or to the cabinet or rack.
4. Align the cables on the battery terminals so that the cable lug will not contact any part of the cabinet or rack, even if the battery is moved. Keep the cable away from any sharp metal edges.
5. Install the battery cables so they cannot be pinched be the UPS or battery cabinet doors.
6. Do not connect the battery terminal to ground (earth). If any battery terminal is inadvertently grounded, remove the source of the ground. Contacting any part of a grounded battery can cause a risk of electric shock.
7. To reduce the risk of fire or electric shock, install the batteries in a temperature and humidity controlled indoor area, free of conductive contaminants.
8. Battery system chassis ground (earth) must be connected to the UPS chassis ground (earth). If you use conduit, this ground conductor must be routed in the same conduit as the battery conductors.
9. Where conductors may be exposed to physical damage, protect the conductors in accordance with all applicable codes.
10. If you are replacing batteries or repairing battery connections, shut off the UPS and remove both AC and DC power.

**Battery Installation Guidelines:**

- Refer to any instructions provided with the batteries, battery breaker and pre-charge /discharge switch.
- External batteries require a fused disconnect or a DC battery breaker. There should be a disconnecting means for each battery string. The external battery fuse protects the battery cables. Size the cables based on the overcurrent protection device.
- The battery cables must be sized for a total maximum voltage drop of 2.0 VDC at the rated DC current.
- Wherever conductors may be exposed to physical damage, protect the conductors in accordance with any applicable codes. This includes battery cables between the UPS and the battery system and cables between battery cabinets or racks.
- APC recommends the routing of battery cables through flexible conduits. Install flexible conduits for battery cables according to local or national codes.
- The battery system ground (earth) must be connected to the UPS chassis ground (earth). This ground conductor must be routed with the battery cables.
- Clean cables and battery terminals before making the battery connections. Apply a thin coating of conductive grease before making the battery connections, or, after connection, apply petroleum jelly to the entire connection.
- Torque battery connections to the battery manufacturer's specifications.

**Follow below battery system guidelines and any instructions shipped with the battery system:**

1. Verify that the DC fuses are removed from the UPS. See *Component Overview* illustration for the location of the DC fuse holder.
2. Install the ground conductor. See *Wiring Termination* illustration for the location of the grounding electrode terminals in the UPS.
3. Connect the cables **between batteries.**
   a. In each battery string, connect the cables between batteries as shown in the battery installation diagram provided with the batteries.
   b. Meter the positive (+) and negative (-) terminal on each battery string to verify proper nominal voltage and polarity.
4. Connect the battery cables **between battery strings.**
   a. Connect the negative (-) cables between battery strings as shown in the battery installation diagram provided with the batteries.
   b. Meter the DC voltage between the positive terminals of the strings. The voltage should measure less than 5 volts. If it exceeds 5 volts, correct any wiring errors before you continue.
   c. Connect the positive (+) cables between battery strings as shown in the battery installation diagram provided with the batteries.
5. Install the battery breaker and pre-charge / discharge switch. Refer to any instructions provided with the battery breaker and pre-charge / discharge switch.
6. Connect the external batteries to the UPS.
   a. Connect the positive (+) cable(s) to the UPS first. Install ring connectors for 8 mm (approx. 5/16") bolts as required.
   b. To prevent short circuits, insulate the UPS end of the negative (-) cable(s).

**CAUTION!**
Do not connect the negative (–) cables to the UPS yet.

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c. Connect the positive (+) cable(s) to the battery system and tighten to the proper torque specifications.
d. Connect the negative (S) cable(s) to the battery system and tighten to the proper torque specifications.

7. Check the DC voltage.
   a. Connect the DC fuse(s) as shown in the battery installation diagram provided with the batteries. Verify proper voltage (216 VDC) and polarity at the battery pack.
   b. Set the battery breaker to “ON”.
   c. Meter for proper nominal DC voltage at the UPS end of the cables. Make sure the polarity agrees with the markings on the UPS battery input terminals.
   d. After checking the DC voltage, set the battery breaker to “OFF”.

8. Connect the negative (-) cable(s) to the UPS. Tighten to the proper torque specifications.
9. Replace all covers.
10. Continue with the “Initial Start-up and Phase Check” section in this Installation Guide.

### 3.4.2 Battery Replacement

Only authorized service personnel familiar with battery systems may replace batteries. See the “Start-up & Shutdown Procedure” section in this Installation Guide to bypass and shut down the UPS.

**CAUTION!**
Study all warnings at the beginning of this section before replacing the batteries.

- **Use the Same Number and Type of Battery:** To ensure a well-functioning UPS and to maintain proper battery charger operation, you must replace a given number of batteries with the same number of batteries. The batteries must be the same manufacturer type as the original batteries and have the same voltage and ampere-hour rating as the original batteries.
- **Verify that the Battery Terminal is not Grounded:** If any battery terminal is inadvertently grounded, you must remove the connection from the terminal to ground (earth) before you service the batteries. Contacting any part of a grounded battery can cause a risk of electric shock. To reduce the risk of electric shocks, disconnect the ground connection before you service the batteries.
- **Handle Used Batteries with Care:** Assume that old batteries are fully charged. Use the same precautions you would use when handling a new battery. Do not short battery terminals or the battery string with a cable or tool when you disconnect the batteries.
- **Dispose of Batteries Properly:** Do not dispose of batteries in a fire as the batteries may explode. Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes and may be toxic. Batteries contain lead. Many state and local governments have regulations about disposing of used batteries. For assistance, call APC Technical Support or call your local APC office.

## 4.0 Initial Start-up and Phase Check

After installing the unit, use this section to perform the initial start-up and the phase check for the Maintenance Bypass Panel.

### 4.1 Initial Start-up and Phase Check (Internal Batteries)

This section is applicable for INITIAL STARTUP of an APC Silcon BC Series UPS with APC Supplied Maintenance Bypass Panel ONLY.

**WARNING**
Some units have been programmed at the factory for "autostart". If programmed for "autostart", the unit will turn on when utility (AC line) is applied (after a 60-second delay). For more information or to change this feature, see the User Guide.
Before continuing, read the warnings on page 2 of this Installation Guide.

**CAUTION!**
No load should be connected when this procedure is carried out.

1. Make sure that all AC and DC power is off.
2. Set the UPS bypass switch to "UPS".
3. Make sure that the main circuit breaker in the load panel is off so that the loads cannot receive power from the UPS.
4. Open the UPS front door(s).
5. Remove the retaining brackets for the fuse holder containing DC fuses F001, F002, and F003. See *Component Overview* illustration in this Installation Guide for location of fuse holder.
6. At the utility input, switch on the input power to the Maintenance Bypass Panel.
7. At the Maintenance Bypass Panel, set the UPS AC disconnect switch to "ON". The UPS display should show "System type xxkVA xxxV".
8. Within 20 seconds, the display should show **Stand-by** and an audible alarm should sound.
9. Check the phase rotation at the service panel and the unit. The unit will not start if the phase rotation is incorrect. **The phase rotation must be A, B, C and clockwise.**
10. When the audible alarm stops, press the green "ON" button located inside the UPS front door. The display should show "Normal operation load power xx%".

**NOTICE!**
One or more alarms may occur. If the alarm(s) persists for more than 20 seconds, refer to the "Alarms" section of the User Guide. If the unit activates a "battery monitor alarm", you should set the user parameter "battery monitor reset" to "ON"

11. Open DC fuse holder (F001, F002, F003). For location of DC fuse holder, see Component *Overview* illustration.
12. Place the DC fuses in the fuse holder. Make sure that the **red tab** on the fuse faces the **top** of the fuse holder. Make sure that the fuse locking tabs are aligned in the slots on the fuse holder. See *DC Fuses* illustration.
13. Press each fuse into place. The fuse will "click" into place when it is locked in correctly.
14. **Using an open palm,** close the fuse holder.

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**DC Fuses**

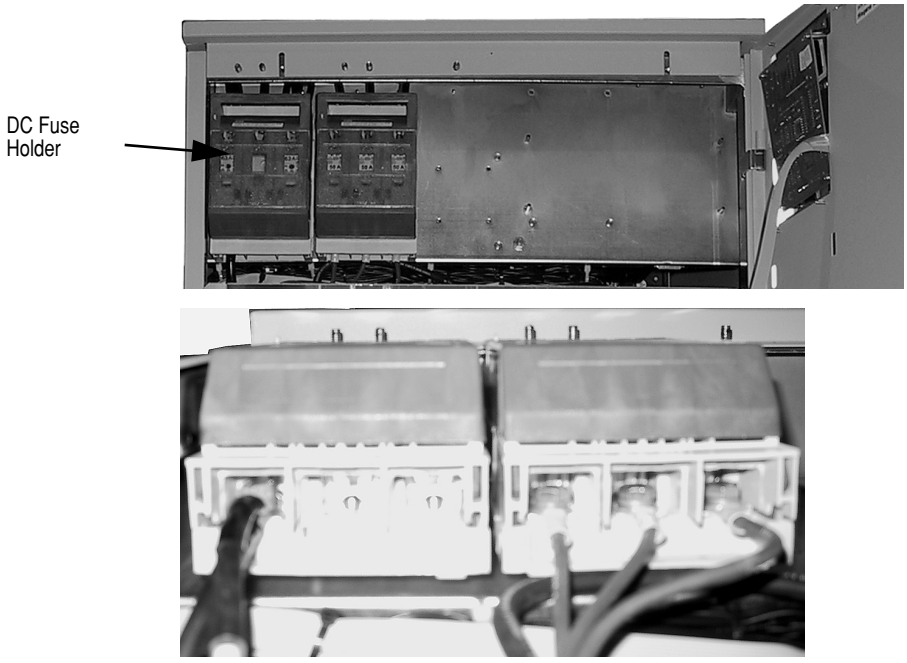


Figure 16

### 4.2 Initial Start-up and Phase Check (External Batteries)

1. Ensure that the external battery breaker for the battery system is set to “OFF”.
2. Open DC fuse holder (F001, F002, F003). For location of DC fuse holder, see *Component Overview* illustration. Place the DC fuses in the fuse holder. Make sure that the **red tab** on the fuse faces the **top** of the fuse holder. Make sure that the fuse locking tabs are aligned in the slots on the fuse holder.
3. Press each fuse into place. The fuse will “click” into place when it is locked in correctly.
4. **Using an open palm,** close the fuse holder.
5. Turn the pre-charge/discharge switch to the “pre-charge” position and hold it until the LED turns off.
6. Switch the battery breaker “ON”. The UPS display should show “System type xxkVA xxxV”.
7. Within 20 seconds, the display should show **Stand-by** and an audible alarm should sound.
8. At utility input, switch on the input power to the Maintenance Bypass Panel.
9. At the Maintenance Bypass Panel, switch the UPS AC disconnect switch “ON”.
10. Check the phase rotation at the service panel and the unit. The unit will not start if the phase rotation is incorrect. **The phase rotation must be A, B, C and clockwise.**
11. When the audible alarm stops, press the green “ON” button located inside the UPS front door. The display will show “Normal operation load power xx%”.

**NOTICE!**
One or more alarms may occur. If the alarm(s) persists for more than 20 seconds, refer to the “Alarms” section of the User Guide. If the unit activates a “battery monitor alarm”, you should set the user parameter “battery monitor reset” to “ON”.

## 5.0 Clearing the Events Log

The events log contains the 250 most recent UPS events, including alarms. To clear the events log, follow the steps below:

1. Press and at the same time. The display should show “Key in password”.

2. Using the key pad, enter “920701”. The display should show “Logging stack is reset”. The events log is now cleared.

3. Press . The display should show “Normal operation load power xx%”.

If the unit will not be in operation immediately, go to the “Start-up and Shutdown Procedure” section.

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# 6.0 Start-up and Shutdown Procedure

## 6.1 Start-up from Maintenance Bypass

This section contains instructions on how to start the UPS from maintenance bypass. The steps in this procedure apply to units with an APC-supplied Maintenance Bypass Panel.

1. Make sure that the following switches are in the following positions:

   The UPS AC disconnect switch should be “OFF”.
   The UPS bypass switch should be on “LINE”.
   The battery breaker should be “OFF”. (External battery units)

2. Switch the UPS AC disconnect switch “ON”. The UPS display should show “System type xxkVA xxxV”.
3. Within 20 seconds, the UPS display should show **Stand-by** and an audible alarm should sound.
4. If the unit has **external** batteries:

   a. Ensure that the external battery breaker for the battery system is set to “OFF”.
   b. Open the DC fuse holder (F001, F002, F003). For location of DC fuse holder, see *Component Overview* illustration.
   c. Place the DC fuses in the fuse holder. Make sure that the red tab on the fuse faces the top of the fuse holder. Make sure that the fuse locking tabs are aligned in the slots on the fuse holder.
   d. Using an open palm, close the fuse holder.
   e. Turn the pre-charge/discharge switch to the “pre-charge” position and keep it this position until the LED turns off.
   f. Switch the battery breaker “ON”.

5. Press the green “on” button located inside the front door of the UPS. The UPS display should show “Normal operation load power xx%”.
6. For **internal** battery units, put the DC fuses (F001, F002, F003) into the DC fuse holder.
7. **Using an open palm,** close the fuse holder.
8. Program the unit into static bypass operation:

   a. Press to access the user parameters.

   b. Press the or key until the display shows “Bypass operation: OFF”.

   c. Press to turn static bypass operation on. The display should show “Bypass operation”.

9. Set the UPS bypass switch to “UPS”.
10. Program the unit to normal operation:

    a. Press to access the user parameters.

    b. Press the or key until the display shows “Bypass operation: ON”.

    c. Press to turn static bypass operation off. The display should show “Normal operation load power xx%”.

### 6.2 Shutdown Procedure

**WARNING**
After shutting down the unit, **wait at least five minutes** before removing any access panels or covers. Access panels should be removed by **authorized service personnel** only.
After the UPS has been shut down, the unit may still contain high voltages.

**TEST BEFORE YOU TOUCH!**
Before continuing, read the warnings on the inside front cover of this manual.

This section contains information on how to shut down the UPS from normal operation mode. This procedure applies to units with an APC-supplied Maintenance Bypass Panel.

1. **If you have shut the loads down:** Move on to step 2.

   **If the loads are to remain powered:** Program the unit into static bypass operation:

   a. Press to access the user parameters.

   b. Press the or key until the display shows “Bypass operation: OFF”.

   c. Press to turn static bypass operation on. The display should show “Bypass operation”.

   d. Set the UPS bypass switch to “BYPASS”.

2. Press the red “OFF” button located inside the UPS front door.
3. Set the UPS AC disconnect switch to “OFF”.
4. If the UPS has **external** batteries:

   a. Switch the battery breaker “OFF”.

   b. Hold the pre-charge/discharge switch in the “discharge” position until the LED turns off.

5. If the UPS has **internal** batteries:

   a. Open the DC fuse holder and remove the DC fuses (F001, F002, F003). Store the fuses in a safe place.

   b. Open the UPS front door and press the green “ON” button to discharge the capacitors.

   To restart the unit, see the section “Start-up from Maintenance Bypass” above.

6. (Optional) If the loads are **not** to be powered, turn off all AC power sources to the UPS and Maintenance Bypass Panel.

# 7.0 Technical Specifications

## 7.1 APC BC300 Series 15kW Technical Data

| | **Voltage** | **3 x 208Y/120** | **3 x 450V Delta** | **3 x 480Y/277 or 3 x 480V Delta** |
|---|---|---|---|---|
| **Input** | Rated input current | 61 Amps | 26 Amps | 26 Amps |
| | Voltage tolerance | | | |
| | Utility | +10 / -15 | +10 / -15 | +10 / -15 |
| | Bypass | +/- 10 | +/- 10 | +/- 10 |
| | Frequency | 60Hz | 60Hz | 60Hz |
| | | +/- 6% (standard) | +/- 6% (standard) | +/- 6% (standard) |
| | Current distortion | 0-5% THD | 0-5% THD | 0-5% THD |
| | Bypass tolerance | | | |
| **Output** | Voltage | 3 x 208Y/120 | 3 x 480Y/277 or 3x 480 Delta | 3 x 480Y/277 or 3x 480 Delta |
| | Voltage tolerance | | | |
| | Static symmetrical load | +/- 1 | +/- 1 | +/- 1 |
| | Static asymmetrical load | +/- 3 | +/- 3 | +/- 3 |
| | Load step | +/- 5 | +/- 5 | +/- 5 |
| | Voltage distortion | 0 - 3% (linear load) | 0 - 3% (linear load) | 0 - 3% (linear load) |
| | Frequency | 60Hz | 60Hz | 60Hz |
| | Utility synchronized | +/- 6% | +/- 6% | +/- 6% |
| | Free-running | +/- 0.1% | +/- 0.1% | +/- 0.1% |
| | Overload capacity | | | |
| | Utility operation 60 seconds | 250% | 250% | 250% |
| | Utility operation 10 minutes | 150% | 150% | 150% |
| | Battery operation 60 seconds | 150% | 150% | 150% |
| | Battery operation 10 minutes | 125% | 125% | 125% |
| | Rated output current | 42 Amps | 19 Amps | 18 Amps |

| | | | | |
|---|---|---|---|---|
| **General** | Temperature<br>Ambient<br>Ideal | <br>32 - 104 º F<br>77 º F | <br>32 - 104 º F<br>77 º F | |
| | Humidity (non condensing) | Max 95% | Max 95% | |
| | Audible Noise (typical) | <65 dBa | <65 dBa | <65 dBa |
| | Efficiency<br>AC to AC normal operation<br>AC to AC economy mode | <br>93%<br>95% | <br>93%<br>95% | |
| | Heat dissipation - kW (BTU)<br>Full rated load normal operation<br>Full rated load economy model<br>0.8 PF load, normal operation<br>0.8 PF load, economy mode | <br>1.13 (3853)<br>0.79 (2694)<br>0.90 (3083)<br>0.63 (2156) | <br>1.13 (3853)<br>0.79 (2694)<br>0.90 (3083)<br>0.63 (2156) | <br>1.13 (3853)<br>0.79 (2694)<br>0.90 (3083)<br>0.63 (2156) |

## 7.2 Battery Specifications

| | | 15kW |
|---|---|---|
| Nominal DC current - Amps | | 75 |
| UL rating of terminal blocks - AWG[a] | | 14 - 2/0 |
| Nominal DC voltage | | 216 |
| Nominal number of cells | | 108 |
| Factory-set float charge voltage[b] | | 246 |
| Charger current limit - Amps[c] | | 8 |
| Inverter efficiency -% | 100% load | 90 |
| | 75% load | 90 |
| | 50% load | 88 |
| | 25% load | 85 |

a. Terminal block has two positive and two negative 8 mm (=5/16") studs, hardware provided. Lug required.
Conductor size may vary based on installation requirements. Size all conductors per applicable codes.

b. Adjust the float charge voltage setting according to the battery manufacturer's recommendations.

c. Programmable to lower level.

## 7.3 Dimensions / Weight

| BC300 Series UPS | 15kW |
|---|---|
| Height | 59.1 inches |
| Width | 23.6 inches |
| Depth | 31.7 inches |
| Weight (without batteries) | 901 lbs |
| Weight (with standard internal batteries) | 1237 lbs (9 minutes back-up time at 0.8 PF)<br>1464 lbs (15 minutes back-up time at 0.8 PF) |

## 8.0 How to Contact APC

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**Web: www.apc.com/support**